CLAIMS

1. A forging die production method comprising a cutting step which employs, as a cutting tool, a ball end mill having a surface which has undergone a hardening treatment and in which a forging die material is cut under conditions where a length of tool extension L (mm), radius R (mm) of a cutting edge of the ball end mill, spindle speed A (rpm) and feed rate B (mm/min) satisfy $(B/A)^2 \times (L/(2\times R)) = 0.01$ to 0.05.

2. A forging die production method according to claim 1, wherein the forging die material has a hardness of HRC 45 to 62.

3. A forging die production method according to claim 1 or claim 2, wherein cutting oil is directly applied to the cutting tool so that the cutting oil flows in a downward direction during cutting.

4. A forging die production method according to any one of claims 1 to 3, wherein the forging die production method includes at least rough cutting, heat treatment, finish cutting and profile cutting, the cutting step is for performing the profile cutting, the profile cutting includes at least three steps wherein pick feeds in respective steps are in proportions of (1.2 to 2) : (0.2 to 0.5) : (0.03 to 0.05), and a feed direction includes at least one of a

direction in relation to contour line processing and a direction in relation to circulation milling.

5. A forging die production method according to any one of claims 1 to 4, wherein a corner recess of a workpiece is cut to have a compound curvature.

6. A forging die produced through the forging die production method according to any one of claims 1 to 5.

7. A forging die according to claim 6, wherein it has a surface roughness Rmax of 5 μm or less and is formed to have a die cavity including a corner recess of a compound curvature.

8. A forged article produced through forging by use of the forging die according to claim 6 or claim 7.